

WHAT IS CLAIMED IS:

1. An absorbent article comprising a laminated outer cover, the laminated outer cover comprising a biodegradable stretched aliphatic-aromatic copolyester film, the film comprising filler particles and a copolyester comprising from about 10 mole% to about 30 mole% of aromatic dicarboxylic acid or ester thereof, from about 20 mole% to about 40 mole% of aliphatic dicarboxylic acid or ester thereof, from about 30 mole% to about 60 mole% dihydric alcohol, and wherein the weight average molecular weight of the copolyester is from about 90,000 to about 160,000 Daltons, and wherein the number average molecular weight of the copolyester is from about 35,000 to about 70,000 Daltons, and wherein the glass transition temperature of the copolyester is less than about 0°C.

2. The absorbent article as set forth in claim 1 wherein the filler particles are present in the film in an amount of from about 30% (by weight of film and filler particles) to about 80% (by weight of film and filler particles).

3. The absorbent article as set forth in claim 1 wherein the filler particles are present in the film in an amount of from about 50% (by weight of film and filler particles) to about 55% (by weight of film and filler particles).

4. The absorbent article as set forth in claim 1 wherein the filler particles are selected from the group consisting of calcium carbonate, non-swellable clays, silica, alumina, barium sulfate, sodium carbonate, talc, magnesium sulfate, titanium dioxide, zeolites, aluminum sulfate, diatomaceous earth, magnesium sulfate, magnesium carbonate, barium carbonate, kaolin, mica, carbon, calcium oxide,

magnesium oxide, aluminum hydroxide and polymer particles.

5. The absorbent article as set forth in claim 4 wherein the filler particles are calcium carbonate.

6. The absorbent article as set forth in claim 1 wherein the filler particles are nonporous.

7. The absorbent article as set forth in claim 1 wherein the copolyester comprises from about 15 mole% to about 25 mole% of aromatic dicarboxylic acid or ester thereof, from about 25 mole% to about 35% percent of aliphatic dicarboxylic acid or ester thereof, and from about 45 mole% to about 55 mole% dihydric alcohol and wherein the weight average molecular weight of the copolyester is from about 100,000 to about 130,000 Daltons, and wherein the number average molecular weight of the copolyester is from about 40,000 to about 60,000 Daltons.

8. The absorbent article as set forth in claim 1 wherein the copolyester comprises from about 17.5 mole% to about 22.5 mole% of aromatic dicarboxylic acid or ester thereof, from about 27.5 mole% to about 32.5 mole% percent of aliphatic dicarboxylic acid or ester thereof, and from about 47.5 mole% to about 52.5 mole% dihydric alcohol and wherein the weight average molecular weight of the copolyester is from about 105,000 to about 120,000 Daltons, and wherein the number average molecular weight of the copolyester is from about 42,000 to about 50,000 Daltons.

9. The absorbent article as set forth in claim 1 wherein the aromatic dicarboxylic acid or ester thereof is selected from the group consisting of unsubstituted and substituted aromatic dicarboxylic acids and C₁-C₆ esters of aromatic dicarboxylic acids.

10. The absorbent article as set forth in claim 1 wherein the aromatic dicarboxylic acid or ester thereof is selected from the group consisting of terephthalic acid, dimethyl terephthalate, isophthalic acid, dimethyl isophthalate, 2,6-naphthalene dicarboxylic acid, dimethyl-2,6-naphthalate, 2,7-naphthalenedicarboxylic acid, dimethyl-2,7-naphthalate, 3,4'-diphenyl ether dicarboxylic acid, dimethyl-3,4'-diphenyl ether dicarboxylate, 4,4'-diphenyl ether dicarboxylic acid, dimethyl-4,4'-diphenyl ether dicarboxylate, 3,4'-diphenyl sulfide dicarboxylic acid, dimethyl-3,4'-diphenyl sulfide dicarboxylate, 4,4'-diphenyl sulfide dicarboxylic acid, dimethyl-4,4'-diphenyl sulfide dicarboxylate, 3,4'-diphenyl sulfone dicarboxylic acid, dimethyl-3,4'-diphenyl sulfone dicarboxylate, 4,4'-diphenyl sulfone dicarboxylic acid, dimethyl-4,4'-diphenyl sulfone dicarboxylate, 3,4'-benzophenonedicarboxylic acid, dimethyl-3,4'-benzophenonedicarboxylate, 4,4'-benzophenonedicarboxylic acid, dimethyl-4,4'-benzophenonedicarboxylate, 1,4-naphthalene dicarboxylic acid, dimethyl-1,4-naphthalate, 4,4'-methylene bis(benzoic acid), dimethyl-4,4'-methylenebis(benzoate), and mixtures of two or more thereof.

11. The absorbent article as set forth in claim 1 wherein the aliphatic dicarboxylic acid or ester thereof is selected from the group consisting of oxalic acid, dimethyl oxalate, malonic acid, dimethyl malonate, succinic acid, dimethyl succinate, methylsuccinic acid, glutaric acid, dimethyl glutarate, 2-methylglutaric acid, 3-methylglutaric acid, adipic acid, dimethyl adipate, 3-methyladipic acid, 2,2,5,5-tetramethylhexanedioic acid, pimelic acid, suberic acid, azelaic acid, dimethyl azelate, sebacic acid, 1,11-undecanedicarboxylic acid, 1,10-decanedicarboxylic acid, undecanedioic acid, 1,12-dodecanedicarboxylic acid, hexadecanedioic acid, docosanedioic acid, tetracosanedioic

acid, dimer acid, 1,4-cyclohexanedicarboxylic acid, dimethyl-1,4-cyclohexanedicarboxylate, 1,3-cyclohexanedicarboxylic acid, dimethyl-1,3-cyclohexanedicarboxylate, 1,1-cyclohexanediacetic acid, and mixtures of two or more thereof.

12. The absorbent article as set forth in claim 1 wherein the aliphatic dicarboxylic acid or ester thereof is selected from the group consisting of succinic acid, dimethyl succinate, glutaric acid, dimethyl glutarate, adipic acid, dimethyl adipate, and dimer acid.

13. The absorbent article as set forth in claim 1 wherein the dihydric alcohol is selected from the group consisting of unsubstituted or substituted, straight chain, branched, or cyclic aliphatic, aliphatic-aromatic, or aromatic diols having from 2 carbon atoms to 36 carbon atoms and poly(alkylene ether) glycols with molecular weights from about 250 to about 4,000.

14. The absorbent article as set forth in claim 1 wherein the dihydric alcohol is selected from the group consisting of ethylene glycol, 1,3-propanediol, 1,4-butanediol, 1,6-hexanediol, 1,8-octanediol, 1,10-decanediol, 1,12-dodecanediol, 1,14-tetradecanediol, 1,16-hexadecanediol, 4,8-bis(hydroxymethyl)-tricyclo[5.2.1.0/2.6]decane, 1,4-cyclohexanedimethanol, di(ethylene glycol), tri(ethylene glycol), poly(ethylene oxide) glycols, poly(butylene ether) glycols, isosorbide, and mixtures of two or more thereof.

15. The absorbent article as set forth in claim 1 wherein the dihydric alcohol is selected from the group consisting of ethylene glycol, 1,3-propanediol, 1,4-butanediol, 1,6-hexanediol, and poly(ethylene oxide) glycols.

16. The absorbent article as set forth in claim 1 wherein the film additionally comprises a polyfunctional branching agent.

17. The absorbent article as set forth in claim 16 wherein the polyfunctional branching agent is selected from the group consisting of a material with three or more carboxylic acid functions, three or more hydroxy functions, and mixtures thereof.

18. The absorbent article as set forth in claim 16 wherein the polyfunctional branching agent is selected from the group consisting of 1,2,4-benzenetricarboxylic acid (trimellitic acid), trimethyl-1,2,4-benzenetricarboxylate, 1,2,4-benzenetricarboxylic anhydride (trimellitic anhydride), 1,3,5-benzenetricarboxylic acid, 1,2,4,5-benzenetetracarboxylic acid (pyromellitic acid), 1,2,4,5-benzenetetracarboxylic dianhydride (pyromellitic anhydride), 3,3',4,4'-benzophenonetetracarboxylic dianhydride, 1,4,5,8-naphthalenetetracarboxylic dianhydride, citric acid, tetrahydrofuran-2,3,4,5-tetracarboxylic acid, 1,3,5-cyclohexanetricarboxylic acid, pentaerythritol, 2-(hydroxymethyl)-1,3-propanediol, 2,2-bis(hydroxymethyl)propionic acid, and mixtures of two or more thereof.

19. The absorbent article as set forth in claim 1 wherein the aromatic dicarboxylic acid is terephthalic acid, the aliphatic dicarboxylic acid is adipic acid, and the dihydric alcohol is 1,4 butanediol.

20. The absorbent article as set forth in claim 19 wherein the filler material is calcium carbonate.

21. The absorbent article as set forth in claim 1

wherein the film has a thickness of less than about 250 micrometers.

22. The absorbent article as set forth in claim 1 wherein the film has a thickness of from about 2.5 micrometers to about 130 micrometers.

23. The absorbent article as set forth in claim 1 wherein the laminated outercover further comprises a nonwoven material.

24. The absorbent article as set forth in claim 23 wherein the nonwoven material is a spunbonded nonwoven material.

25. The absorbent article as set forth in claim 23 wherein the nonwoven material has a basis weight of less than about 30 grams per square meter.

26. The absorbent article as set forth in claim 23 wherein the film and the nonwoven material are bonded together with an adhesive.

27. The absorbent article as set forth in claim 23 wherein the film and the nonwoven material are thermally bonded together.

28. The absorbent article as set forth in claim 23 wherein the film and the nonwoven material are ultrasonically bonded together.

29. The absorbent article as set forth in claim 1 wherein the laminated outercover further comprises a bonded carded web.

30. The absorbent article as set forth in claim 1 wherein the laminated outercover further comprises a

spunbond-meltblown laminate.

31. The absorbent article as set forth in claim 1 wherein the laminated outercover further comprises a spunlace nonwoven.

32. The absorbent article as set forth in claim 1 wherein the laminated outercover further comprises a polylactic acid-based substrate.

33. The absorbent article as set forth in claim 1 wherein the film has a hydrostatic pressure resistance of at least about 60 millibar.

34. The absorbent article as set forth in claim 1 wherein the film has a hydrostatic pressure resistance of at least about 80 millibar.

35. The absorbent article as set forth in claim 1 wherein the film has a hydrostatic pressure resistance of at least about 120 millibar.

36. The absorbent article as set forth in claim 1 wherein the film has a hydrostatic pressure resistance of at least about 180 millibar.

37. The absorbent article as set forth in claim 1 wherein the film has a water vapor transmission rate of at least about 2000 g/m²/day.

38. The absorbent article as set forth in claim 1 wherein the film has a water vapor transmission rate of at least about 5,000 g/m²/day.

39. The absorbent article as set forth in claim 1 wherein the film has a water vapor transmission rate of at least about 10,000 g/m²/day.

40. The absorbent article as set forth in claim 1 wherein the film has a water vapor transmission rate of at least about 25,000 g/m²/day.

41. The absorbent article as set forth in claim 1 wherein the film has a modulus of elasticity of from about 50 MPa to about 250 MPa.

42. The absorbent article as set forth in claim 1 wherein the film has a modulus of elasticity of from about 70 MPa to about 150 MPa.

43. The absorbent article as set forth in claim 1 wherein the film has a modulus of elasticity of from about 80 MPa to about 100 MPa.

44. The absorbent article as set forth in claim 1 wherein the film can be stretched in the machine direction and not break until from about 15% strain to about 100% strain is reached.

45. The absorbent article as set forth in claim 1 wherein the film can be stretched in the machine direction and not break until from about 20% strain to about 60% strain is reached.

46. The absorbent article as set forth in claim 1 wherein the film can be stretched in the machine direction and not break until from about 30% strain to about 50% strain is reached.

47. The absorbent article as set forth in claim 1 wherein the film can be stretched in the cross direction and not break until from about 150% strain to about 500% strain is reached.

48. The absorbent article as set forth in claim 1

wherein the film can be stretched in the cross direction and not break until from about 175% strain to about 400% strain is reached.

49. The absorbent article as set forth in claim 1 wherein the film can be stretched in the cross direction and not break until from about 200% strain to about 300% strain is reached.

50. The absorbent article as set forth in claim 1 wherein the film has a break stress of from about 10 MPa to about 50 MPa.

51. The absorbent article as set forth in claim 1 wherein the film has a break stress of from about 15 MPa to about 40 MPa.

52. The absorbent article as set forth in claim 1 wherein the film has a break stress of from about 25 MPa to about 35 MPa.

53. The absorbent article as set forth in claim 1 wherein the absorbent article is selected from the group consisting of diapers, training pants, and adult incontinence garments.

54. An absorbent article comprising a laminated outer cover, the laminated outer cover comprising a biodegradable stretched aliphatic-aromatic copolyester film, the film comprising filler particles and a copolyester comprising from about 10 mole% to about 30 mole% terephthalic acid, from about 20 mole% to about 40 mole% adipic acid, from about 30 mole% to about 60 mole% 1,4-butanediol, and wherein the copolyester has a weight average molecular weight of from about 90,000 to about 160,000 Daltons and a number average molecular weight of from about 35,000 to about 70,000

Daltons, and wherein the glass transition temperature of the copolyester is less than about 0°C.

55. The absorbent article as set forth in claim 54 wherein the filler particles are present in the film in an amount of from about 30% (by weight of film and filler particles) to about 80% (by weight of film and filler particles).

56. The absorbent article as set forth in claim 54 wherein the filler particles are selected from the group consisting of calcium carbonate, non-swellable clays, silica, alumina, barium sulfate, sodium carbonate, talc, magnesium sulfate, titanium dioxide, zeolites, aluminum sulfate, diatomaceous earth, magnesium sulfate, magnesium carbonate, barium carbonate, kaolin, mica, carbon, calcium oxide, magnesium oxide, aluminum hydroxide and polymer particles.

57. The absorbent article as set forth in claim 56 wherein the filler particles are calcium carbonate.